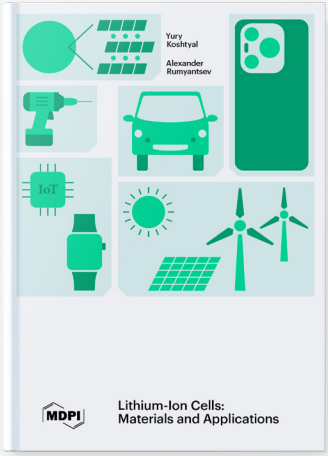
MDPI Books



Open Access Book

Lithium-Ion Cells: Materials and Applications

Yury Koshtyal and Alexander Rumyantsev

A large number of articles and books have been published on the designated topics, but most of the literary sources describe the results of scientific articles on the synthesis and study of perspective materials, reveal circuit and design solutions for constructing control systems and manufacturing batteries, and are educational materials. Only a small part of the published sources include the following: descriptions of materials produced industrially and used in the LIC manufacturing process; demonstrations of the industrially produced LIC energy and power parameters; analysis of the characteristics of manufactured miniature lithium-ion cells, solid-state LICs, lithium metal cells, and all-solid-state cells. Considering the popularity of these topics, one can hope to find detailed information on the Internet. However, we encountered the following challenges: the data are somewhat fragmented, systematization and structuring are required, and search results do not always meet search queries. For instance, data relevant to the topic were found, but they did not match the query; as accumulated data grow, the search time for new information extends; the choice of search engine and location (different countries) affects search results; the data are not indexed in search engines, although the correct keywords and website were requested; the information disappears due to website updates; and the found data require additional processing. Many presentations show changes in the shape of the discharge curves depending on the discharge current strength. However, Ragone plots are necessary for a correct comparison, as well as mathematical processing of presented results. Thus, this book was written to systematize and structure information on industrially produced materials for LIC manufacturing and industrially produced and promising LICs (and lithium metal rechargeable cells) for various applications.

mdpi.com/books/monograph/9937